

Digital Directions

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FEATURES

The New Standard



A faster and more reliable wireless standard is putting wireless-network expansion high on the priority list as schools' digital needs grow.

By **Katie Ash**

The combination of a faster and more reliable wireless standard, set to debut in November, and a push to integrate laptops, netbooks, and smartphones into classrooms has spurred many schools to evaluate and expand their wireless-network capabilities.

"Education overall is one of the leading industries in terms of the adoption of wireless," says Chris Kozup, a mobility-solutions manager for San Jose, Calif.-based Cisco Systems Inc. "Learning institutions recognize that in order to stay ahead of the curve, mobility and wireless are key areas where they need to make this investment."

The new wireless standard, 802.11n, will also significantly increase the amount of bandwidth available on the network, making it faster and easier for large numbers of students to connect, says Kozup.

"We expect to see a lot of K-12 organizations really using [802.11n] to make wireless a key part of the classroom learning experience," he says. "I think it's a great opportunity for schools."

But not all schools are ready to invest in a high-speed wireless network right away, says Darrell Walery, the director of technology for the 10,000-student Consolidated High School District 230 in Orland Park, Ill., southwest of Chicago.

"Most school districts start off with a few carts of laptops with a wireless access point, and that's a very logical way to start the process," he says. "I don't think it's a bad thing to jump right into [a full

 [Back to Story](#)



roaming wireless network], but to do that for a large school is going to be pretty expensive.”

Starting small can also help establish legitimacy and buy-in from the faculty and school board, says Walery.

However, securing a wireless network can be more complicated than protecting a wired network, says Walery, which could deter schools from going entirely wireless. “There is no doubt that securing a wireless network is more of a challenge. I would bet if you did a survey right now, you would find many existing school wireless networks are not secured properly,” he says.

In addition, establishing a wireless network implies that schools will be moving toward greater use of laptops and other mobile devices, which raises a whole new set of logistical and financial challenges for schools, says Walery.

Still, “[wireless] gives people the flexibility to do the kinds of things you just can’t do with [a wired network],” says Walery. For instance, science teachers can take their classes outside to learn about the environment and still use the Internet as a resource, he says. Or students can sign on to the Internet with individual mobile devices, like laptops or netbooks, to research and complete assignments individually.

“It opens up a lot more opportunities,” says Walery.

Predicting Future Needs

Ensuring that the network is capable of expanding and scaling up to meet future needs is also an important factor to take into consideration, says Michael Flood, the vertical manager for K-12 education for Overland Park, Kan.-based Sprint.

“If you’re a school district, and you’re just thinking about deploying a wireless network, you need to ask yourself, ‘What is the capacity I need today, and what’s the capacity I’m going to need over the next few years?’ ” he says. “You really need to think about the future and where you want to go.”

Wireless Providers

Aruba Networks Inc.

Cisco Systems Inc.

IBM

Meru Networks Inc.

Motorola Inc.

Proxim Wireless Corp.

Sprint

Building a network that has to be upgraded every year to keep up with a district’s technological needs can be much more expensive and harder to budget for than an initial investment in a scalable wireless network, says Flood.

Whatever network setup a district chooses, working with a trustworthy vendor that will conduct an on-site survey of the campus is imperative, says Walery from Orland Park, Ill.

“[The vendor] can draw it up [without visiting the building], and it might not work just the way they think it’s going to because the wireless signal can be impeded by different building materials,” he says.

Even the number of students and teachers in the building can change how many access points are needed and where they should be placed, says Walery, so it's a good idea to schedule the on-site survey while school is in session.

Facing Challenges

One obstacle many schools face is the ability to accommodate the density of users attempting to connect to the network, says Rachna Ahlawat, the vice president of marketing for Sunnyvale, Calif.-based Meru Networks.

"The teacher has no time to waste. As soon as the class starts, everybody needs to connect onto the network," she says. Considering that there are roughly 25 students in each classroom and multiple classrooms of students attempting to connect simultaneously, K-12 school networks are often required to surpass the capacity of many corporate networks.

Planning for that sudden influx of users each class period is an essential step in implementing wireless effectively, says Ahlawat.

Another issue schools should take into consideration is how the wireless network will be managed.

"With a small IT staff in K-12, it becomes a management nightmare," says Manish Rai, Schaumburg, Ill.-based Motorola's director of marketing for wireless-network solutions. Having a centrally managed system that allows the IT staff to monitor the network at all times from a remote site, such as an administrative building, is key to keeping the network running smoothly, he says.

Ahlawat from Meru Networks agrees. "You need a very good management system so that even before the teacher complains, the network manager ... can see what's happening," she says. The management system should also be able to re-create problems, so that the IT staff can troubleshoot the issues that teachers and students report.

Network Security

Over the past five years, the 43,000-student Klein Independent School District in Klein, Texas, has built a wireless-network system that encompasses all of its 39 campuses. In fact, students and teachers can access the wireless network not only from inside the school, but also from the school parking lot, says Karen D. Fuller, the district's chief technology officer.

"The reason we did that was because not everyone has connectivity at home," she says. "So if they live near one of our campuses, they can drive into the parking lot and access the network resources that they need."

To protect the wireless network from being used by nonstudents, the network only allows Klein-approved equipment to connect to the network, says Fuller.

Another way to keep wireless networks safe, says Michael Tennefoss, the head of strategic marketing for the Sunnyvale, Calif.-based Aruba Networks Inc., is to implement end-point compliance. That is a security feature that analyzes the hardware attempting to connect to the network for viruses and then redirects questionable computers to a quarantined area of the network, where the user can download the necessary patches to continue connecting to the wireless network safely.

"It provides a way to remediate the source of the problems and ensure that viruses don't spread inadvertently or intentionally," Tennefoss says.

'Tremendous Savings'

Wireless networks also have the potential to save districts money, says Tennefoss. Going wireless can help "reduce the cost of network upgrades, reduce the electricity that's consumed, and reduce the amount of carbon dioxide" schools use, he says. "It yields tremendous savings."

Walery, from the Consolidated High School District 230, says his district spent about \$178,000 on a recent upgrade to his network, which covered three high schools and the administrative center. That amount included 153 access points and the configuration and installation of the controllers. It did not include installation of the access points, since Walery and his team undertook that task themselves.

The cost of a wireless network will depend on the number of buildings, the size of those buildings, and how pervasive the coverage should be, says Walery, who estimates that on average, for a high school of 2,500 to 3,000 students, installing a wireless network could cost anywhere from \$50,000 to \$70,000.

Engaging in "network right-sizing" allows schools to evaluate how much use the wired and wireless networks in a district are receiving and then adjust the networks to meet the school's needs, says Tennefoss, from Aruba Networks.

"As more and more ... districts are buying wireless-enabled devices like laptops and PDAs, the demand for wireless connection is growing and the demand for wired connections is shrinking," he says. "It makes sense to go through and consolidate the total number of switches just to those that are required for the connections that are being used."

Shifting from wired connections to a wireless network is a step many schools are now taking, says Tennefoss.

"There's a migration going on in a pretty big way where the K-12 schools are upgrading their infrastructure," he says. "Schools are assessing what they have and what they need. They're cutting the cord and moving on to wireless."